



Investment Opportunities in Oil and Gas in Alberta, Canada



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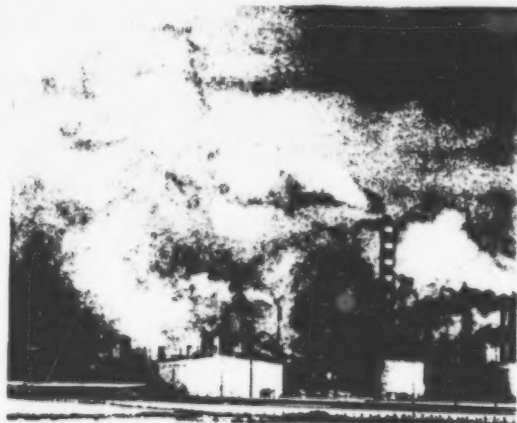
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INVESTMENT OPPORTUNITIES IN OIL AND GAS IN ALBERTA, CANADA

The National Energy Program, which imposed severe restraints on the industry, has been dismantled. Provincial royalties on oil and gas were reduced in 1986, resulting in the lowest rates since 1974. Oil royalty holidays have been enhanced and extended.

Alberta is relatively young in terms of oil and gas exploration, and remaining oil and gas reserves are large.

The province has a long history of political stability. The Government of Alberta has strongly supported free enterprise for more than 50 years.



Strong growth years, moreover, have left Alberta with an extensive infrastructure of roads, pipelines, communications systems and serviced communities.

Modern communications systems link every part of Alberta with the world. The province enjoys fine medical services, educational institutions and world-class facilities in science and technology.

The universities and technical schools are closely involved with the training of people entering the oil and gas industries. Computer time is available to industry at the universities. This includes use of the University of Calgary's Supercomputer, established to encourage research in leading-edge application software.

Calgary and Edmonton are ranked among the cleanest, safest cities in the world. They support a vibrant cultural life, including a film industry and performing arts.



The province's recreational facilities include Edmonton's acclaimed river valley park system, and, in Calgary, the legacy of the 1988 Winter Olympics. The Canadian Rockies are world-renowned.

Alberta has an abundant supply of that most vital resource, an educated work force. In this respect, Albertans lead the country. Thirty-seven per cent of the population had attained post-secondary education in 1986.



Alberta — Rich in Oil and Gas



Introduction

Alberta, Canada, has long been known for the magnitude of its oil and natural gas resources — and for proven technology and innovation in their exploration and development.

Situated east of the Rocky Mountains and north of Montana, Alberta is one of Canada's largest provinces, encompassing an area of 255,000 square miles. Its mixed terrain includes the Rockies, vast grasslands in the south and forest in the north.

About 2.4 million people, or 10 per cent of Canada's population, live in the province. More than half reside in the cosmopolitan cities of Edmonton and Calgary. Edmonton, the provincial capital, is a commercial, governmental and oil refining centre. Calgary, a financial and commercial centre, is the location for over 600 head offices of energy and resource corporations.

A major oil discovery in Leduc, Alberta, in 1947 sparked the beginning of the province's modern oil industry. Most of the province overlies the Western Canadian Sedimentary Basin, the source of Alberta's oil and gas wealth.

The population of this young province, which was established in 1905, has tripled in the 40 years since the Leduc discovery. This growth is a result of rapid expansion in the oil and gas industry which has fuelled the provincial economy.

Investors find Alberta to be Canada's province of energy opportunity. The oil and gas industry is bouncing back from the lower oil prices of 1986, aided by reduced operating costs and a prompt and sensitive response by provincial and federal governments.

While finding costs vary widely, at present Canadian finding costs are about one third less per barrel than in the U.S.

About 1.6 million people — 68 per cent of the population — are in the major working age group between 15 and 64 years. This work force has a wide range of skills, including managerial and technical. Alberta is home to a large number of geologists, geophysicists and engineers with skills devoted to natural resource exploration and development.



The work force is both stable and competitive. Labor costs have moderated to the lowest levels in several years.

Today these factors make Alberta one of the most attractive sites in the world for oil and gas investment.

Alberta's Substantial Reserves

Alberta has been accurately described as the energy storehouse of Canada. The province provides about 85 per cent of total Canadian output of crude oil, natural gas and related products.

The province's remaining **established conventional crude oil*** reserves at the end of 1986 totalled approximately 4 billion barrels. This represents about 75 per cent of Canada's remaining established reserves of conventional crude oil. Alberta currently

*Established reserves are defined as those reserves recoverable with current technology and under present and anticipated economic conditions, specifically proved by drilling, testing or production. Remaining established reserves for any year are the initial established reserves less cumulative production.

produces slightly more than one million barrels per day of crude oil and equivalent.

Alberta's Oil Sands are potentially the province's most important energy resource. They constitute one of the world's largest fossil fuel reserves.

The oil sands consist of a black, tar-like mixture of sand, clay, water and bitumen — a naturally occurring viscous mixture of hydrocarbons which in its natural state is not commercially recoverable through a well.

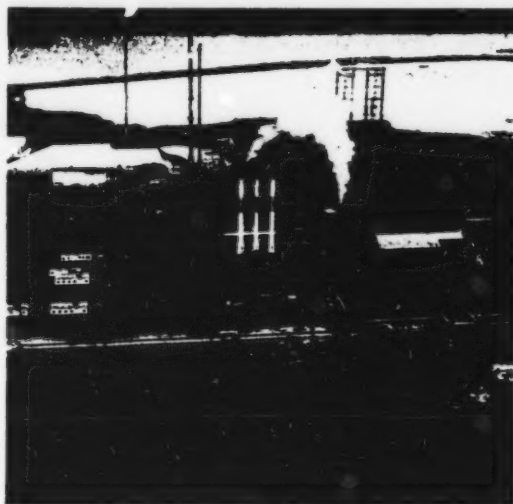
Ultimate recoverable reserves of bitumen are estimated at about 300 billion barrels. These reserves occur in strata which may be found on the surface or to depths of 2,000 feet. Almost 20 per cent of these reserves can be surface mined; the balance is recovered using in situ methods (those which recover the oil in place).

Two commercial operations today produce synthetic crude oil through surface mining of the Athabasca oil sands. (The term synthetic crude, to distinguish it from conventional oil, refers to oil extracted from the oil sands and upgraded to market quality.) As well, revolutionary strides are being made in technology to improve production and resource recovery, both by surface mining and by in situ methods. At Cold Lake, Esso Resources Canada Ltd. employs in situ techniques for large-scale commercial production.



Remaining established natural gas reserves in Alberta totalled 61 trillion cubic feet (tcf) at the end of 1986.

Sulphur, a by-product of natural gas, is used primarily in the chemical and fertilizer industries.



The Feedstock Advantage, based on Alberta's assured supply of natural gas at market prices, forms the lifeblood of a world-scale petrochemical industry. The province is one of Canada's three main petrochemical-producing areas, along with Quebec and Ontario. The petrochemical industry is the third largest manufacturing sector in Alberta. Most growth in the province's petrochemical industry has occurred in the last 12 to 14 years.

Policy of Partnership in Development

The Alberta Government owns about 85 per cent of the province's mineral reserves, and leases mineral rights to the private sector for development.

Although development relies on the initiative of the private sector, Alberta has been prepared to be an equity participant in projects believed to be of

long-term benefit. Syncrude Canada's large scale oil sands operation, in which the province is one of several partners, is an excellent example of various levels of government and industry working together in a successful business endeavor.

Creating a healthy investment climate for energy is a provincial priority. Consequently, Alberta's legislation and policies for petroleum and natural gas are favorable to investors of every size. Policies affecting petroleum resources result from consultation between representatives of industry and government.

Benefits industry will find in Alberta include:

- A stable business environment
- A government committed to free enterprise
- Fair, structured operating conditions
- World-class data resources
- Highly trained and skilled manpower resource.



The Role of the Alberta Government



Major Changes

Recent deregulation has brought major changes to Alberta's oil and gas industry.

A new and freer climate was ushered in with the Western Energy Accord. This federal-provincial agreement, signed in March 1985, removed controls on the pricing and marketing of crude oil and petroleum products.

The Western Accord was followed in October 1985, with the Agreement on Natural Gas Markets and Prices. This laid the foundation for the deregulation of domestic gas markets and created more liberal export conditions.

The major changes in gas pricing and marketing to date:

- Direct sales are now permitted between the producer and purchaser.
- More relaxed export conditions to the United States are now in effect. The surplus test, previously required by Canada's National Energy Board, has been significantly relaxed.

- Gas prices are now dependent on market forces; government price controls have been eliminated.

These changes represent major accomplishments. Progress is continuing in further deregulation.

Custodianship Role

From exploration to the collection of royalties, the Government of Alberta plays a role through various agencies in the management of the province's energy resources. The province has been responsible for Alberta's energy resources since 1930. Before that, natural resources were under the control of the federal government.

As custodian of oil, gas and mineral resources, the government's role is to set the broad framework for resource policy and regulation. This is achieved through various government departments and agencies:

Alberta Department of Energy

The provincial government's energy department is responsible for overall policy and management of energy resources. Its legislated mandate is to promote effective management of Alberta's energy resources, while by right of ownership it collects the provincial government's fair share of petroleum resource revenues through royalties.



Exploration and the Acquisition of Rights

The Mineral Resources Division of Alberta Energy leases oil, gas and other mineral rights to industry for development.

Geophysical exploration may be undertaken throughout the province by any recognized individual or company, without the need for the explorer to hold an agreement for oil and gas rights. In a few areas, however, such exploration may be prohibited for environmental reasons.

An exclusive agreement to oil and gas rights is required before exploratory drilling and development may take place. A nominal fee is charged for lease rentals, whether or not the area is producing.

Acquiring Oil and Gas Rights — Directly or Indirectly

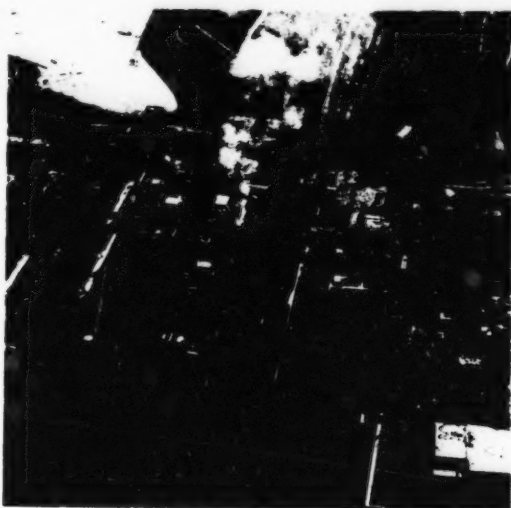
Investors have three ways of obtaining rights:

1. Direct lease, by obtaining an agreement for oil and gas exploration from the Mineral Resources Division of Alberta Energy through public tender. An individual or corporation wanting to acquire an agreement on a particular parcel of rights can request that it be posted at land sales held every two weeks in Calgary. Leases are awarded on the basis of a sealed bonus bid system.
2. Investors can negotiate farm-in agreements with companies which have already acquired oil and gas rights. Alberta now has almost 54,000 active conventional oil and gas agreements, held jointly or singly by about 2,000 companies.
3. Participate in a joint venture or equity purchase.



Retention of Oil and Gas Rights

Leases are continued indefinitely at the end of their five-year initial term on the basis of their capability to produce; those rights which lie outside the limits of demonstrated pools, or below those pools, revert to the Crown in order that they may be made available for others to explore and develop.



Administration of Royalties

The government collects a royalty on all oil, gas and mineral production from lands leased by the province. Royalties are administered by the Department of Energy's Mineral Revenues Division.

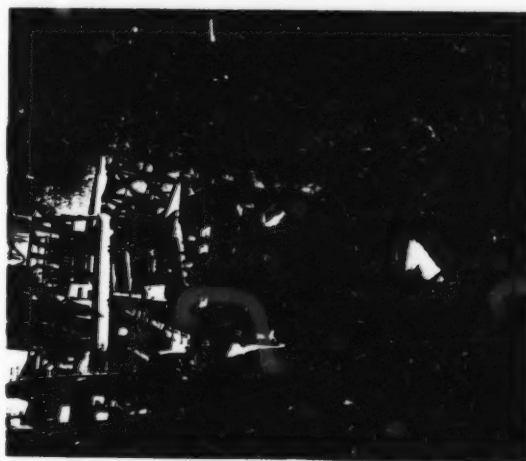


Energy Resources Conservation Board

The Energy Resources Conservation Board (ERCB) operates under provincial legislation and receives half its funding from the private sector and half from the Alberta government. It is responsible for ensuring that Alberta's energy resources are developed in a safe, orderly manner that avoids waste, controls pollution and brings fairness and a sense of balance to the needs and concerns of the public, the government and the industry.

The ERCB ensures the safe development of Alberta's energy resources by setting the standards and specifications for energy development projects, through regulations and conditions included with project approvals. It also inspects operating sites and enforces the standards, specifications and conditions of approval. Before a potential oil or gas well is drilled, a well licence must be obtained from the ERCB.

The board, which has earned the respect of the industry through its technical expertise, maintains a vast data base giving the private sector access to more than 600 miles of core, 7.5 million vials of drill cuttings and many other related petrophysical and reservoir information.



Information from cores, cuttings and other items from exploratory wells is held confidential for one year, after which it is made public. Information from other wells is always public.

Alberta Oil Sands Equity

Alberta Oil Sands Equity manages the province's investment in the Syncrude Canada Ltd. project in an exploration and development program on six oil sands leases in northeastern Alberta.



The Alberta Petroleum Marketing Commission

The Alberta Petroleum Marketing Commission sells the province's share of crude oil obtained through royalties and, on request, acts as an agent for other producers. At the direction of the government, the commission markets the government's share of the synthetic oil production from the Syncrude project.

The Alberta Oil Sands Research and Technology Authority

The Alberta Oil Sands Technology and Research Authority (AOSTRA) is a provincial Crown corporation with a mandate to promote research and development of technology leading to efficient and economic recovery and processing of crude bitumen and other oil sands products.

Working in co-operation with industry, AOSTRA's involvement in technological development ranges from academic and institutional research to the support of large-scale field pilots and demonstration units. The development of technology for enhanced recovery from conventional light oil reservoirs was added to AOSTRA's mandate in 1980.



Alberta's Oil and Gas Opportunities: A Closer Look



Low Finding Costs

Exploration and development costs for conventional crude oil in Alberta are significantly lower than in most other areas of Canada and the U.S., due largely to Alberta's favorable geology and infrastructure.

The average cost of finding a barrel of crude oil equivalent (which includes natural gas measured in terms of a barrel of oil) was \$6 (U.S.)* in the latter part of 1987, according to a study by the Canadian Energy Research Institute.

Operating costs for crude oil production are also lower in Alberta than in most other parts of Canada and the United States, due to a well-defined infrastructure and a mature industry. The vast majority of conventional crude oil production remained viable at the lowest prices recorded in 1986.

In 1986, the success rate for exploratory oil and gas wells was 49 per cent. A rate of 80 per cent was achieved for development wells.

CONVENTIONAL CRUDE OIL: Canadians depend heavily upon conventional crude to supply transportation, industry and residential needs. On a per capita basis, Canadians are the largest consumers of energy in the world. About 35 per cent of Canadian primary energy demand is filled by crude oil.

Alberta's 1986 production of crude oil and equivalent amounted to 1.3 million barrels per day, 85 per cent of the country's oil production. About three quarters of this production is exported to other Canadian provinces and into the U.S. The balance is refined or consumed within Alberta.

Overall market prospects are excellent. The province's proximity to the large U.S. market ensures continued market growth. The free trade initiative between Canada and the United States confirms Canada's present policy in energy, which is based on world prices and essentially free markets within North America.

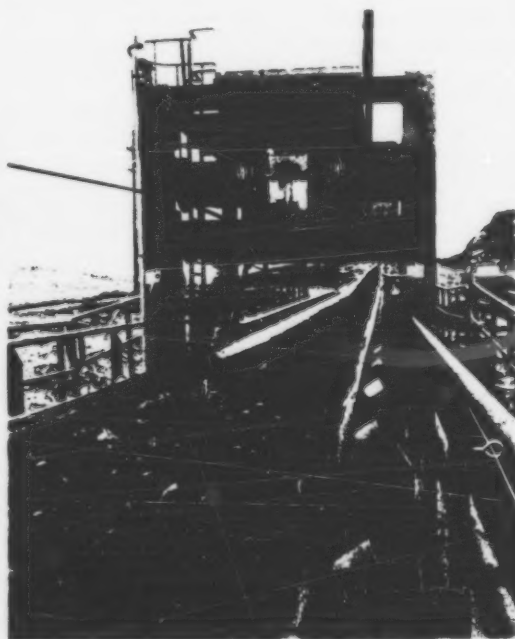
**U.S. dollar used throughout unless otherwise noted*

Alberta's extensive pipeline system covers more than 110,000 miles within the province, and is a vital factor in oil and natural gas prospects. Pipelines connect in all directions, supplying eastern Canada, part of British Columbia and a substantial part of the U.S.

ENHANCED OIL RECOVERY: Alberta is a world leader in enhanced oil recovery (EOR) — the use of highly complex techniques to improve recovery rates from partially depleted reservoirs. Water injection, commonly referred to as secondary recovery technology, is the most common EOR method and is common practice in the Alberta oil fields.

Advanced or 'tertiary' recovery techniques, such as miscible floods, are also being employed. These involve injecting various hydrocarbon solvents into reservoirs to move the oil. Today more than 45 EOR projects, using miscible drive technology and varying in size and complexity, operate in the province.

The Government of Alberta is committed to the development and implementation of EOR projects. The principal provincial EOR program essentially reduces current royalties payable in exchange for future royalties from the incremental production derived from the miscible flood. This is termed "4.2 Relief" after the section of the Petroleum Royalty Regulations on which it is based.



HEAVY OIL: Heavy oil is thick and viscous. A major product of heavy oil is asphalt used for highway paving, shingles and roofing tar.

Remaining established reserves of conventional heavy oil in Alberta contain an estimated 300 million barrels. Only a small percentage, however, is recoverable by primary methods. Thermal projects are in operation which use and develop new technology to recover heavy oil.



Most heavy oil is exported to the U.S. Midwest. With upgrading facilities to turn heavy oil into lighter conventional oil for refining, Alberta refineries would be assured of a compatible feedstock as conventional light crude oil supply declines. Industry and government interest in this aspect of energy development is increasing.

NATURAL GAS: Alberta accounts for 86 per cent of Canada's production of natural gas. Production of natural gas ranged from 1.9 to 2.5 tcf per year throughout the 1980s, and totalled 2.5 tcf in 1986.



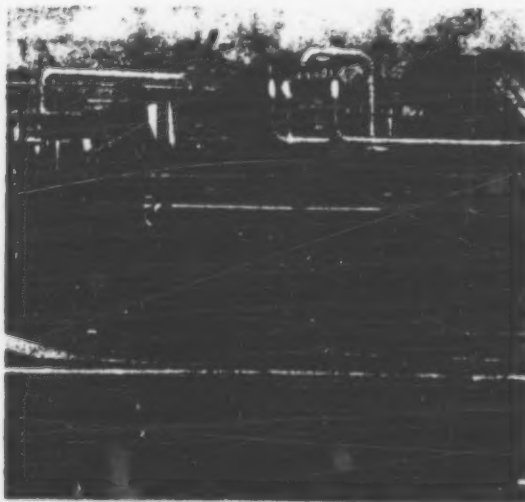
GAS DEPOSITS

Approximately 75 per cent of Alberta's natural gas production is exported to eastern Canada and the U.S. The balance is used in Alberta for heating, generation of electricity and as petrochemical feedstock.

Market prospects look especially promising. As Canadian natural gas exports have become deregulated, Alberta producers have been able to price competitively in the key markets of California and Midwest states such as Illinois and North Dakota. Since Canadian deregulation was founded in October, 1985, new sales into the U.S. have been limited by the restrictions on pipelines by U.S. regulatory authorities. Although Canada currently supplies about four per cent of the total U.S. gas market, that figure is expected to increase soon as order returns to the market. U.S. pipeline restrictions are eliminated and the U.S. domestic production further declines.

Natural gas requires processing to separate various components, which can include ethane and other natural gas liquids, as well as methane, the natural gas used for most heating. Demand is on the upswing for natural gas liquids, used for a variety of purposes, including feedstock and dilution of crude oil in pipelines.

Sulphur, produced from the hydrogen sulphide removed from raw natural gas streams, is of growing importance. Alberta's sulphur is shipped world-wide and in 1986 accounted for about 45 per cent of the world's sulphur trade. The 1986 average world price for sulphur was \$97/tonne; revenue to producers reached nearly \$670 million.

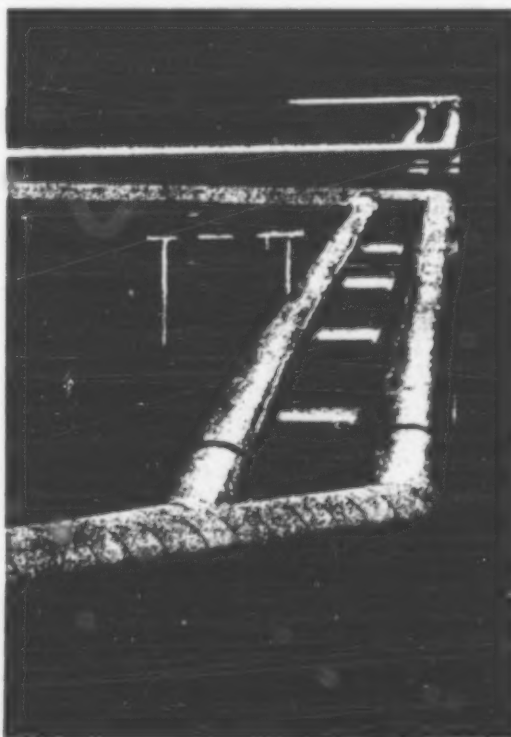


OIL SANDS: Oil sands development is progressing rapidly in terms of productivity, reliability and efficiency, both for surface mining and in situ extraction.

Suncor began the first commercial-scale oil sands venture in 1967, with a 50,000-barrel-per-day mining and upgrading facility. Two large oil sands mining operations, Syncrude and Suncor, now produce an average of 185,000 barrels per day of synthetic crude oil.

Although developing the oil sands remains a long term investment, today's increased emphasis on advanced technology and synthetic fuels points the way to future opportunity.

Oil companies began experimenting with in situ techniques in the mid-1970s. Today there are several experimental and commercial projects of this type; about 100,000 barrels of bitumen (the term used for non-upgraded oil sands production) are produced commercially per day. Active research is lowering operating costs and increasing recovery factors, now in the 17 to 20 per cent range. Much of this research is sponsored by AOSTRA and is shared with the private sector.



New technology and smaller-scale concepts are reducing the initial capital requirements for these in situ projects, and increasing their attractiveness to investors. The 1987 announcement that Esso Resources Canada Ltd. will expand its Cold Lake development by almost 50 per cent is a significant sign of rising confidence.

The market for oil sands production is promising. Synthetic crude and bitumen output have risen rapidly over the last five years, with U.S. Midwest refiners taking the largest portion. Direct pipeline connections into Chicago position the province well to compete in this large market.

The drive to use new technology to reduce unit costs and improve reliability in surface mining is showing marked results. In 1987, Syncrude produced synthetic crude oil at a cost of \$11 per barrel, compared to \$19 per barrel in 1979. Recovery factors of up to 92 per cent are being attained for surface mines. These facts are a tribute to Alberta's skill in the extraction of high-quality oil from sands.

PETROCHEMICAL AND RELATED INDUSTRIES:

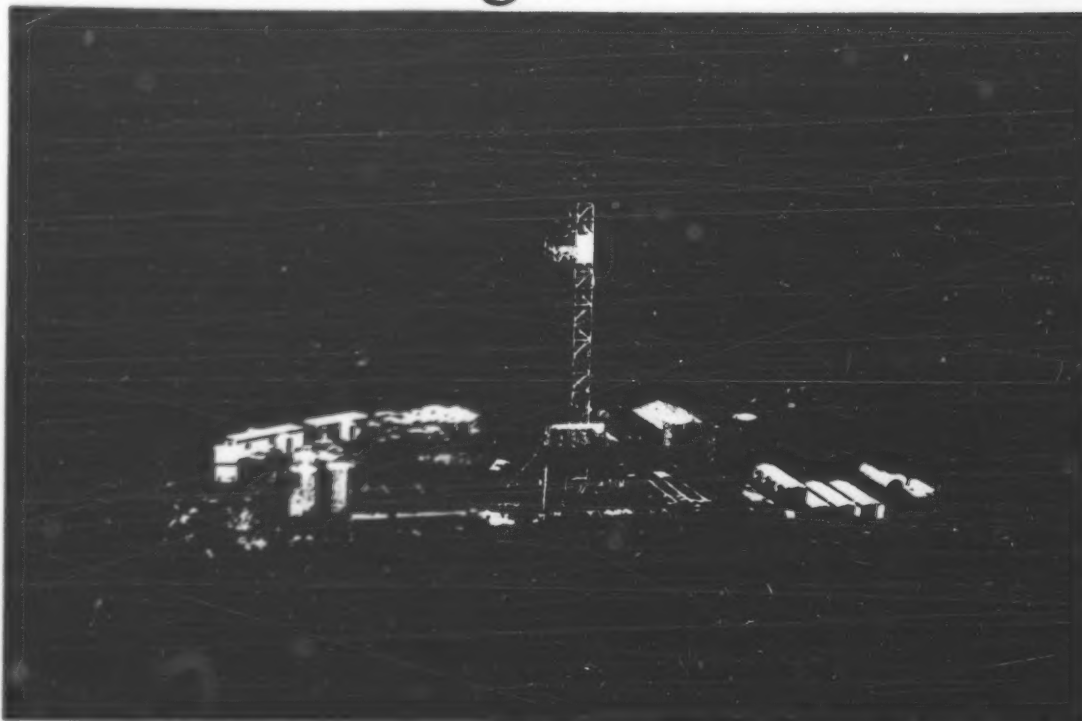
Petrochemical processes change the molecular structure of hydrocarbons. This results in chemicals which can be made into an array of essential consumer and industrial products for markets in the U.S., Japan, Korea and Europe.

In Alberta, ethane, a natural gas component, is the raw material used in the production of ethylene-based petrochemicals. The province's refining base includes two world-scale ethane cracking plants at Joffre. Ethylene is used in the manufacture of plastics, film and bags, anti-freeze, adhesives, paints, textiles and many other items. In terms of ethylene derivative capacity, Alberta-based plants produce over 80 per cent of the nation's ethylene glycol, and one-third of its polyethylene.

Other chemical and fertilizer plants are situated in such areas as Fort Saskatchewan, Edmonton (Clover Bar), Prentiss, Scotford, Carsland and Medicine Hat.

Demand for Alberta feedstocks and refining capability is expected to grow at a modest rate. The industry is on competitive footing with other major petrochemical nations, largely due to Alberta's investment in new world-scale plants, its well-established infrastructure and experienced personnel.

Government Programs



The Alberta and Canadian governments have responded to world market events by enacting policies and special programs to stimulate economic activity and continue to promote effective use of resources.

As a result, net returns to oil producers in Alberta are roughly equivalent to 1985 levels, when prices were much stronger.

ROYALTY RATE REDUCTIONS: In response to declining oil prices in 1986, royalty rates were reduced by the provincial government and today are at their lowest levels since 1974.

ROYALTY HOLIDAY PROGRAMS: These programs encourage exploration for conventional oil and gas by allowing royalty-free periods of production for successful wells.

ALBERTA ROYALTY TAX CREDIT: This program is a selective Crown royalty reduction aimed at providing small producers with additional cash flow.

ENHANCED OIL RECOVERY: The government recognizes the high cost of enhanced oil recovery through special royalty provisions.

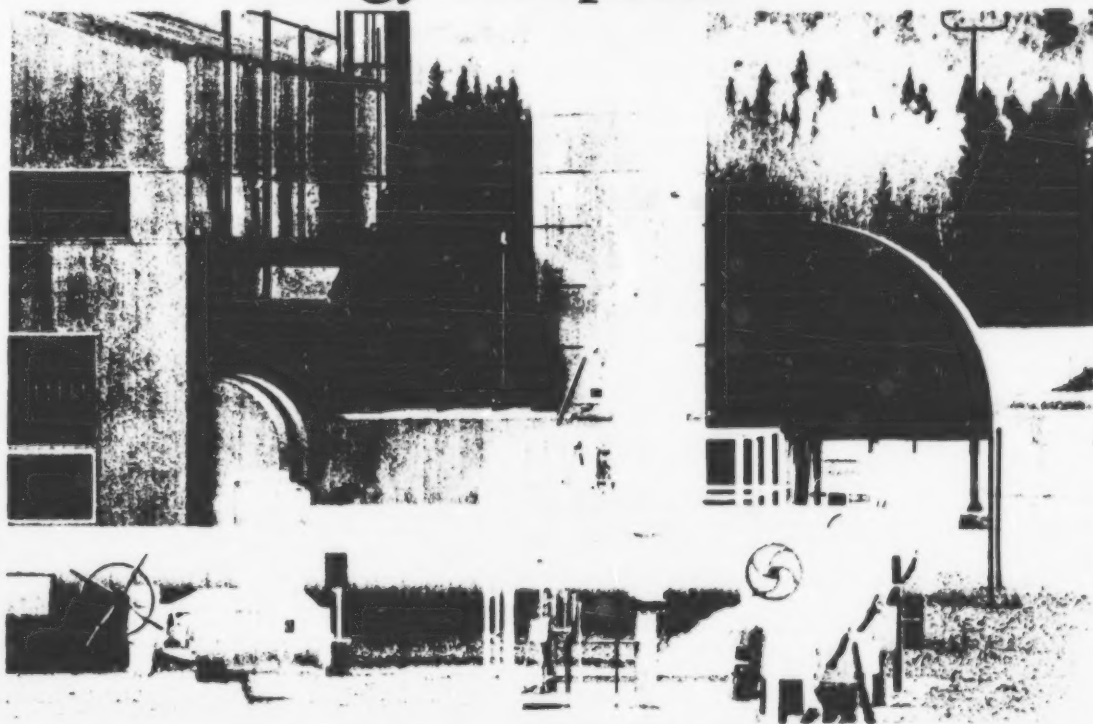
NON-CONVENTIONAL OIL PROJECTS: For non-conventional crude oil production from oil sands, the royalty structure is based on the concept of a nominal royalty until capital investment has been recovered, at which time a profit-sensitive royalty is triggered. This royalty regime is negotiated with the provincial government on an individual basis.

EXPERIMENTAL PROJECTS: New and innovative small projects qualify for experimental status. A low, flat royalty rate is levied on these projects.

Federal Government Assistance

A 1987 federal initiative, the Canadian Exploration and Development Incentive Program, provides producers with cash grants for a portion of the costs of new drilling and exploration up to \$10 million of expenditure per firm per year.

Future Energy Prospects



The time is right for major development in the oil sands. Oil supply trends indicate declining production and rising prices for conventional light crude oil. Production of oil from oil sands has proven to be economically viable, and the industry is now ready for further development;

Alberta has the potential to emerge from the 1980s as a major North American participant in petrochemicals, with assured feedstock supply and private investment now in place.

Most of the industry's attention is at present focused on attractive oil and gas plays in the north and central portions of the province, where a number of recent discoveries have demonstrated the potential for prolific new reservoirs. The areas of Rocky Mountain House, Peace River-Grande Prairie and Caroline are especially active.

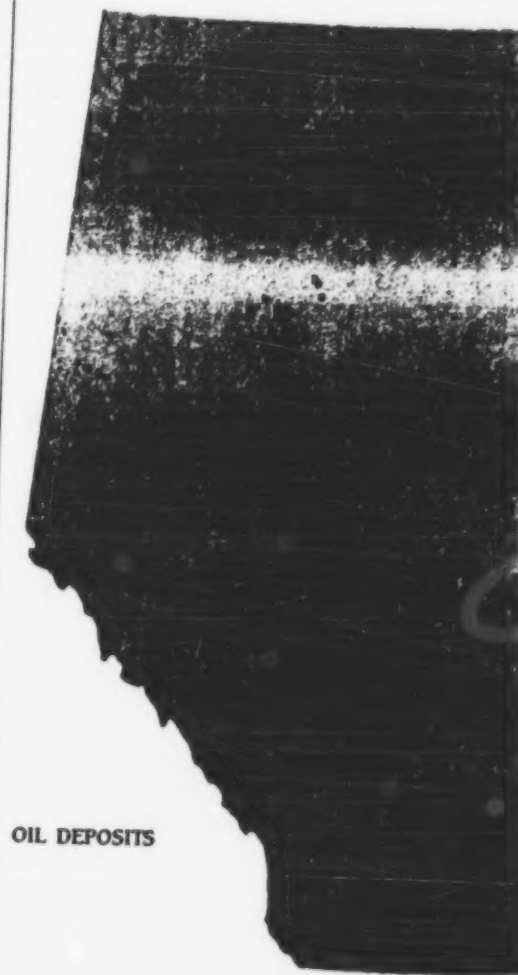
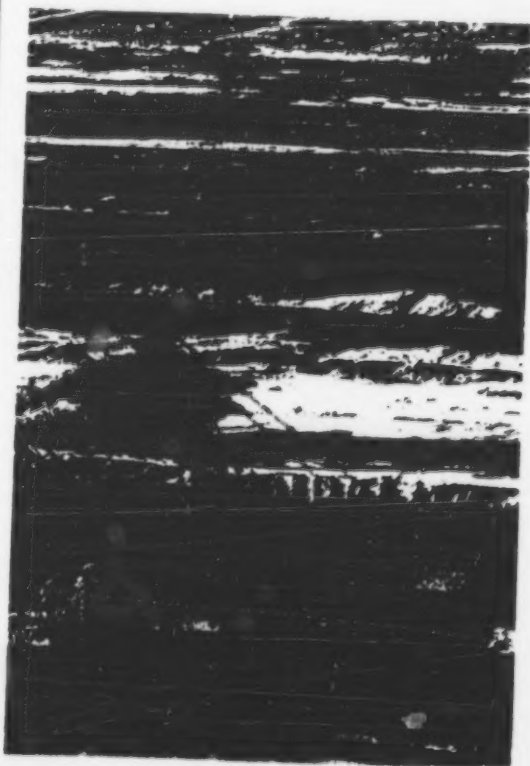


Favorable Investment Climate

The potential investor will find in Alberta:

- Potential for significant discoveries*
- Proximity to the U.S. market
- A stable and attractive fiscal regime
- Low finding, labor and operating costs
- A stable political climate which encourages free enterprise and foreign investment
- An extensive infrastructure of roads, pipelines and services
- Affordable, available industrial land
- A world-class data base in the ERCB
- An open, competitive bid process for oil and gas leases

**(In 1986, for example, a gas field with estimated reserves exceeding 2 trillion cubic feet was discovered in a well-explored area of central Alberta.)*



OIL DEPOSITS

For More Information

Two provincial government departments provide assistance to the resource sector. The Department of Energy oversees the province's resources, while Economic Development and Trade helps to stimulate economic diversification and growth in the private sector. Among its many functions, the latter provides counselling and site location assistance to companies wishing to locate in Alberta.

Alberta Energy/Forestry, Lands and Wildlife
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Listing of Alberta Trade Offices Outside Canada

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